

What is Matter?

Matter- anything that

1. has mass
2. takes up space

Volume

-the measure of the amount of space an object takes up

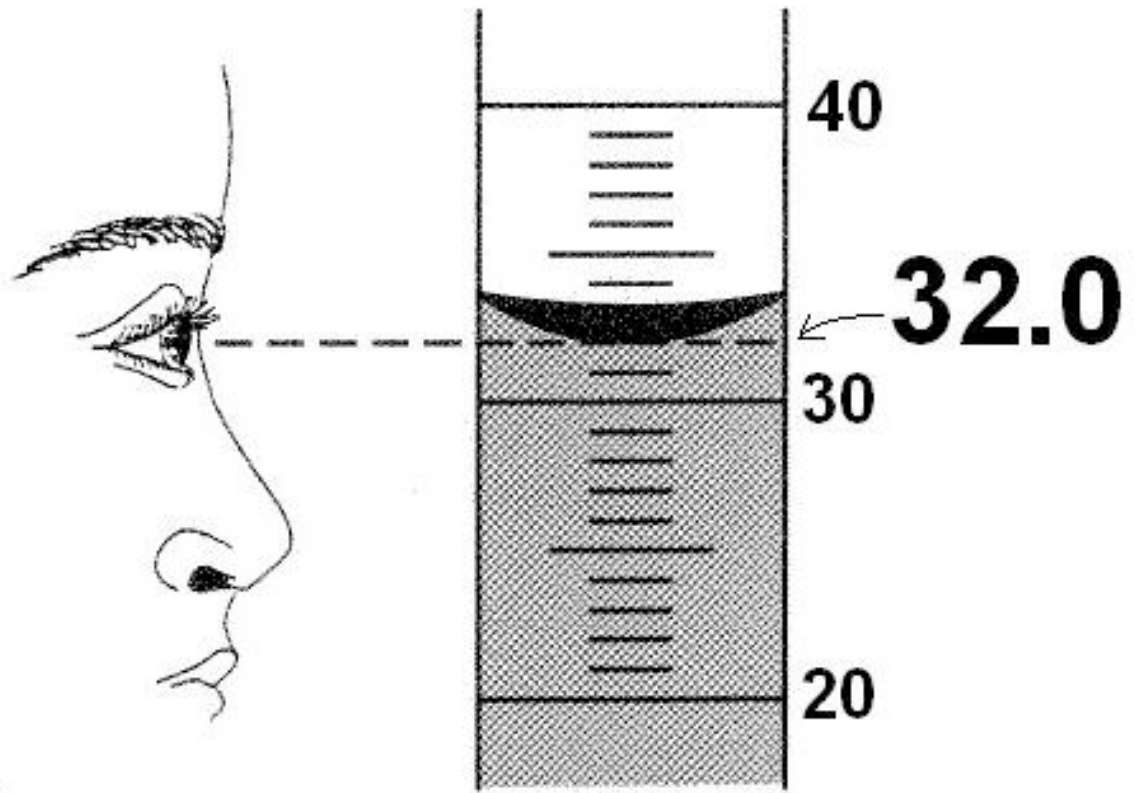
1. All matter has volume.
2. Because everything takes up space, no two objects (no matter how small) can occupy the same space at the same time.

Measuring Volume

1. **Liquids:**

Graduated cylinders allow you to measure the volume of liquids because they are accurate.

When measuring inside the graduated cylinder, read the number at the bottom of the water curve. This is called the **meniscus**.



Larger amounts of liquid are measured in **liters**

ex. Soda in bottles

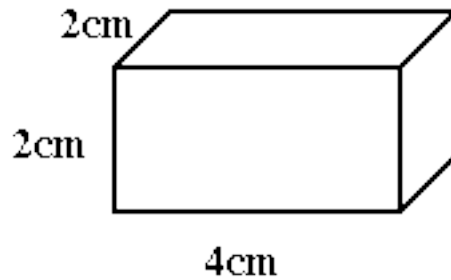
Small amounts of liquid are measured in

milliliters

Ex. Cups of water

2.Solids

A.Regular Shape



Volume = Length X Width X Height

Label is usually m^3 (meters cubed) or cm^3 (centimeters cubed)

B.Irregular Shape

Water Displacement

Put water in a graduated cylinder and record the volume

Place the object in the graduated cylinder and record the new Volume

Subtract the two numbers and you have the objects volume

Ex



Fill a graduated cylinder with 10 ml of water.

Place the key in the graduated cylinder

Record the new volume ex. 13 ml

Subtract the two volumes

$$13 \text{ ml} - 10 \text{ ml} = 3 \text{ ml}$$

$$\text{ml} = \text{cm}^3$$

The volume of the key is 13 cm³

Mass vs. Weight

Mass	Weight
Measure of matter in an object	Measure of gravitational force of an object
Never Ever Changes	Changes, depending on the objects place in the universe (planets, moons etc.)
Measured by a balance	Measured by a spring scale
Measured in kilograms (kg), grams (g) or milligrams (mg)	Measured in Newtons

Remember:

- Mass and weight are the same on Earth

- More gravity = more weight

That is why you weigh more on Earth than you do on The Moon.